Space Weather Forecast

Issued on Tuesday, 13 December 2022 at 00:29 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Moderate class flares (R1-R2; Minor-Moderate radio blackouts) throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low over the past 24 hours, with occasional low-level Common-class flares recorded. The largest of these flares was at 12/0036 UTC from the vicinity of one of the smaller groups in the northwest. No Coronal Mass Ejection (CME). This is just one of eleven sunspot regions currently on the visible disc. All regions observed have been simple unipolar or bipolar regions, with the largest regions relatively stable during the period with little significant change.

Solar Wind / Geomagnetic Activity: Solar winds over the past 24 hours have been mostly at slightly elevated levels - around 450 km/s. The number of particles in the solar wind were at near average levels, while their magnetic field was weak. The important north-south component of the field showed no protracted aligned or anti-aligned periods (with Earth's field). This resulted in Quiet to Unsettled geomagnetic activity (Kp 0-3).

Energetic Particles / Solar Radiation: No solar radiation storms were observed during the period.

Four-Day Space Weather Forecast Summary

Solar Activity: There is a chance of isolated Moderate-class X-ray flares each day. Further arriving regions over the coming days may see a further slight increase in activity.

Solar Wind / Geomagnetic Activity: No Earth-directed CMEs have been observed from available imagery. An enhancement in solar winds from a minor fast wind may graze Earth during day 1 (13th). Muted effects are predicted by persistence, if any. Geomagnetic activity is likely to be Quiet to Unsettled with a chance of an Active interval on day 1 (13th). Predominantly Quiet geomagnetic activity is expected by day 3 (15th).

Energetic Particles / Solar Radiation: Solar radiation storms should remain near background levels throughout, with a daily slight chance of seeing S1+ levels if any significant flares were to occur.

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Met Office Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	1	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	40	30	25	25
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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